Michigan Residential Heating Oil and Propane Price Survey

2015-2016 Heating Season

This report summarizes the results of a survey of residential No. 2 distillate fuel oil (home heating oil) and propane (liquefied petroleum gas) prices over the 2015-2016 heating season in Michigan. The Michigan Public Service Commission (MPSC) conducted the survey under a cooperative agreement with the U.S. Department of Energy's (DOE) Energy Information Administration (EIA). This survey was funded, in part, by a grant from the EIA.

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2015-2016 SHOPP Report

Winter Snapshot

The winter season of 2015-2016 was milder than the previous year with few really intense bouts of cold weather. In fact, according to the National Oceanic and Atmospheric Administration (NOAA), the past winter set a new record by being 4.6 degrees (Fahrenheit) above the 20th century average.

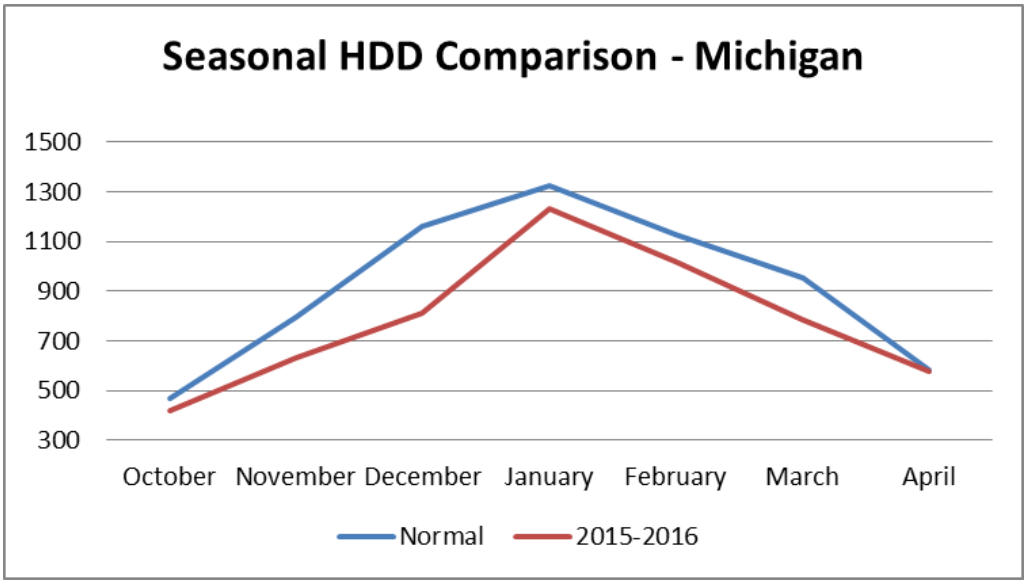
The demand for propane during the colder months was readily met as the market had sufficient propane inventories. Further, high stocks of propane going into the heating season, more propane in storage, and more propane under contract for the season all helped to keep prices low.

Crude oil inventories have remained at historic highs, well above the five-year average going back as far as December 2014. In fact, for an extended run starting in the fourth week of January 2016, crude stocks hit a record high for each of the following eight weeks with stocks setting a new record high each week. This extended run of high stocks contributed to keeping the price of crude oil low. Following the initial fall of crude prices which started in 2014, crude oil prices have remained low. Throughout the winter heating season of 2015-2016, prices ranged in the $40's and $30's per barrel with the second week in February seeing lows in the high to mid-$20's per barrel. From that low, prices see-sawed higher reaching a high of just over $41 per barrel in the third week of March. The ultimate impact of these low crude prices was to keep the price of propane and heating oil low as well

Highlights

- Michigan's "Winter Heating Season" (Oct. – March) was nearly 16 percent warmer than normal.
- High inventories, lower prices, and moderate weather led to an uneventful heating season in Michigan.
- Propane prices averaged 32 percent lower than the 2014/15 winter season.
- Heating oil prices averaged over 30 percent lower than the 2014/15 winter season.
- U.S. propane stocks ended the season (March 25, 2016) at 62.8 million barrels, well above the 5-year average for that period.

Heating oil did not experience any supply or serious price issues and remained obtainable all winter. Heating oil retains a smaller market share in Michigan, estimated at less than 2 percent.

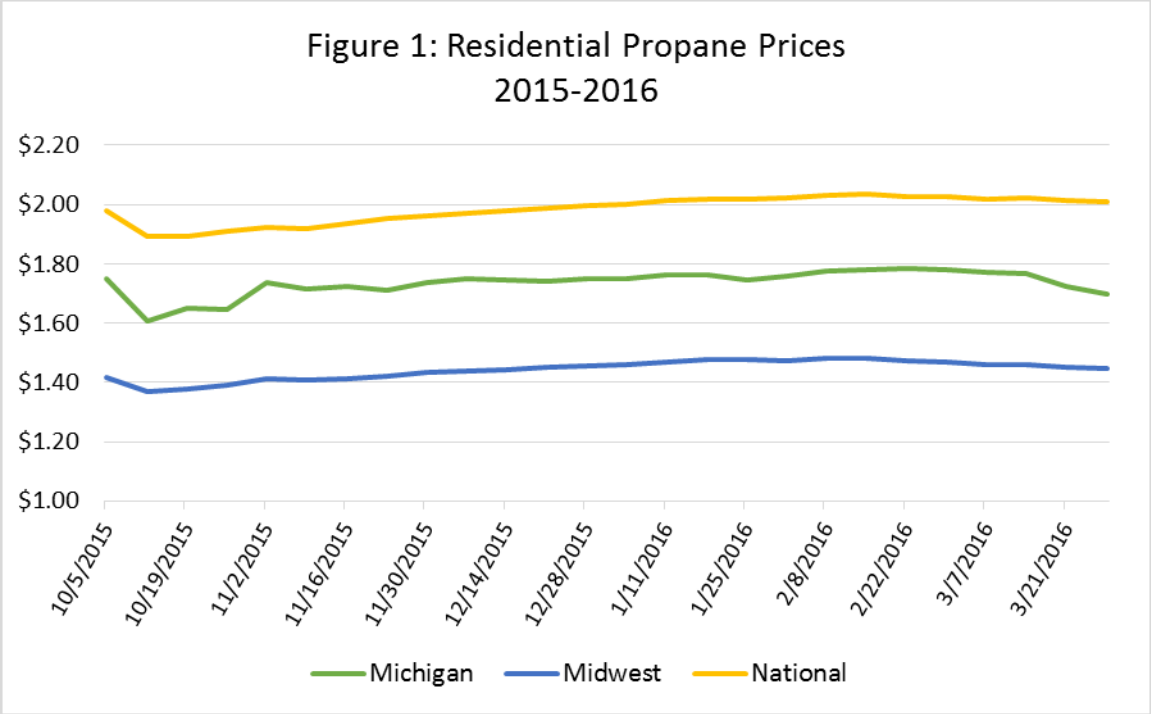


Purpose of Survey

The State Heating Oil and Propane Survey (SHOPP), is designed to collect data on state-level stocks and residential prices of No. 2 heating oil and propane during the heating season. The data are used to monitor the prices of propane and heating oil during the winter season, in an effort to maintain awareness of any price or supply irregularities that may be developing.

Residential Propane Prices

As noted above, the price of propane is closely tied with the price of crude oil and the supply of propane is closely tied to available supplies of crude oil and as well as natural gas. Factors contributing to this year's lower prices and ready availability of propane were the low prices and plentiful supply of crude and the continued boom in natural gas production. Hydraulic fracturing of shale formations has led to a large increase in natural gas production which in turn has increased the inventories of propane as natural gas processing also produces propane.



According to the EIA, about 6 percent of U.S. households heat with propane. In Michigan it is estimated to be slightly above 8 percent.

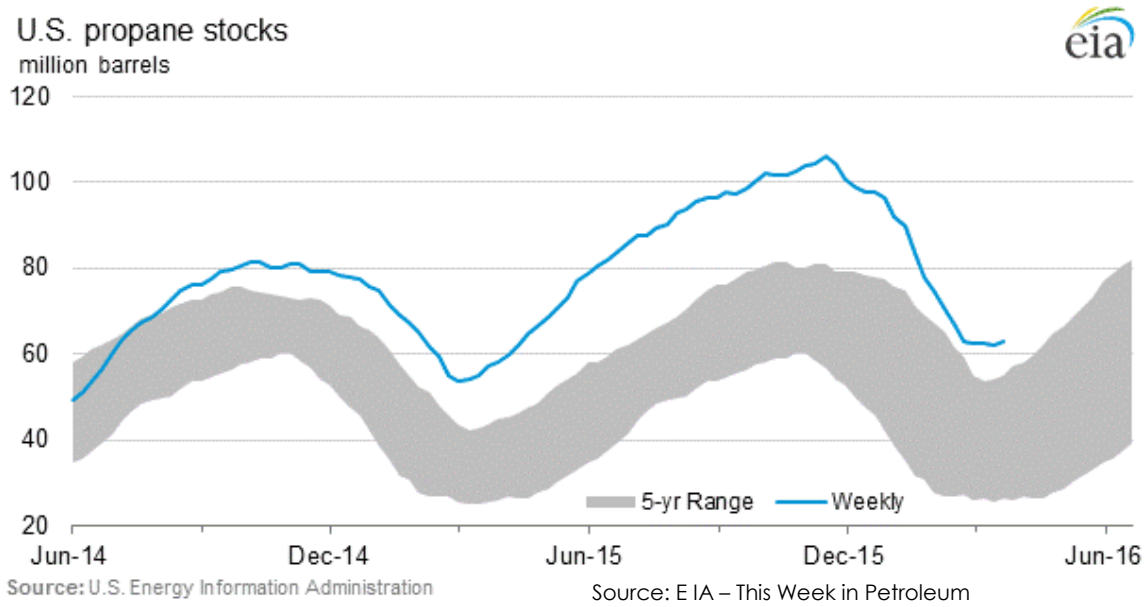
As seen in Figure 1, Michigan propane prices were consistently below the trend of national prices, but higher than the Midwest throughout the entire heating season. At the start of the 2015-2016 heating season, the weighted average residential price of propane in Michigan was $1.75 per gallon, excluding the 4 percent state sales tax. This was 32 cents lower than the price a year ago. As seen in the Figure 1, after a slight dip for the next three weeks, this price stayed essentially the same throughout the entire season varying only a few cents and only ever getting as "high" as $1.78 for a few weeks in February. The average price of propane over the October to March Survey period was $1.73 per gallon in Michigan, a decrease of just over 19 percent from the survey period in 2014-2015.

2015	**10/05**	**10/12**	**10/19**	**10/26**	**11/02**	**11/09**	**11/16**	**11/23**	**11/30**	**12/07**	**12/14**	**12/21**	**12/28**
Michigan	1.75	1.61	1.65	1.64	1.72	1.72	1.72	1.71	1.74	1.75	1.75	1.74	1.75
Midwest	1.41	1.37	1.38	1.39	1.41	1.41	1.41	1.42	1.43	1.44	1.44	1.45	1.45
National	1.98	1.89	1.89	1.91	1.92	1.92	1.94	1.95	1.96	1.97	1.98	1.99	2.00
2016	**1/04**	**1/11**	**01/18**	**01/25**	**02/01**	**02/08**	**02/15**	**02/22**	**02/29**	**03/07**	**03/14**	**03/21**	**03/28**
Michigan	1.75	1.76	1.76	1.76	1.76	1.78	1.78	1.78	1.78	1.77	1.77	1.73	1.70
Midwest	1.46	1.47	1.48	1.47	1.47	1.48	1.48	1.48	1.47	1.46	1.46	1.45	1.45
National	2.00	2.01	2.02	2.02	2.02	2.03	2.03	2.03	2.03	2.02	2.02	2.01	2.01

Propane supply

As shown in Figure 2, the heating season began with U.S. propane stocks well above the five-year average range, a carry through from the previous year when propane stocks were also well above the five-year average. According to EIA, US propane inventory stood at approximately 100 million barrels at the beginning of the heating season in 2015, about 19 million barrels more than propane stocks one year earlier. U.S. propane stocks remained above the five year-range throughout the winter and at the close of the heating season on March 28, 2016, propane stocks were 62.8 million barrels, almost 15 percent higher than they had been at the same time the last year.

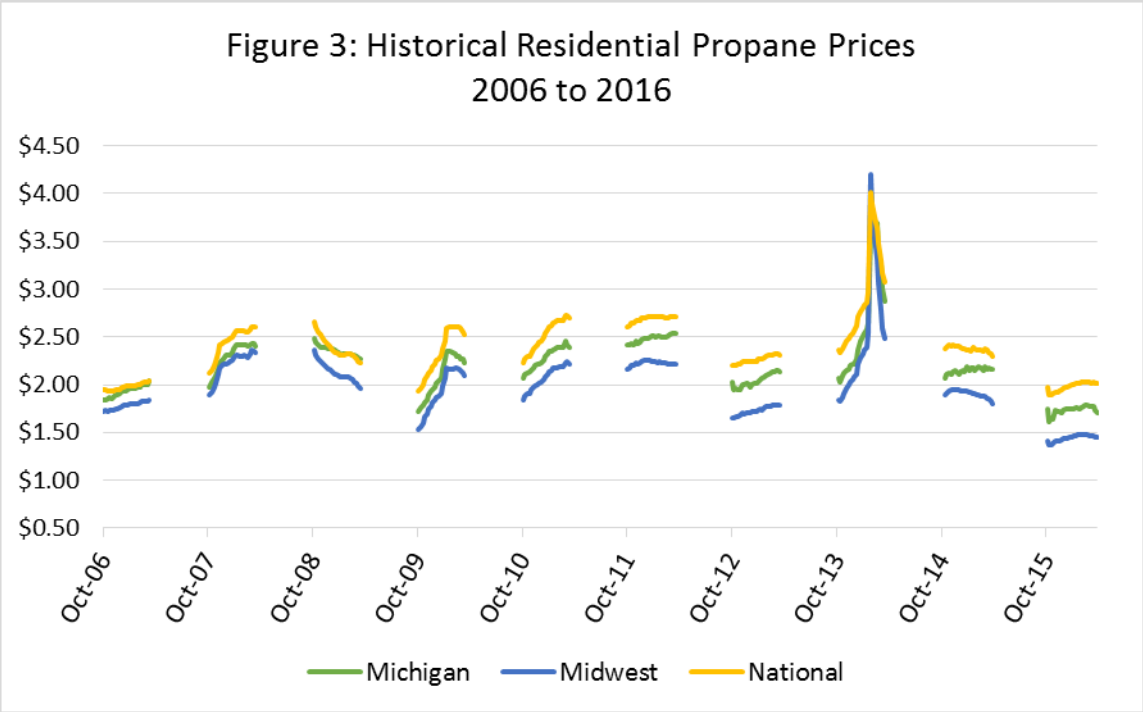
Figure 2: U.S. Propane Stocks



Source: E IA – This Week in Petroleum

Figure 3 shows the pattern of monthly average propane prices over the previous eleven heating seasons. Current low crude oil prices and high inventories as well as increased natural gas production and low natural gas prices have contributed to low propane prices. According to a 2013 report by ICF, through at least 2020, it is expected that up to about 90 percent of US propane supplies will come from natural gas liquids from shale gas supplanting past supply from crude oil refining operations.[1]

[1] Propane Supply Sources and Trends, April 2013
https://www.npga.org/files/ICF%20Propane%20Supply%20Sources%20and%20Trends%20April%202013.pdf

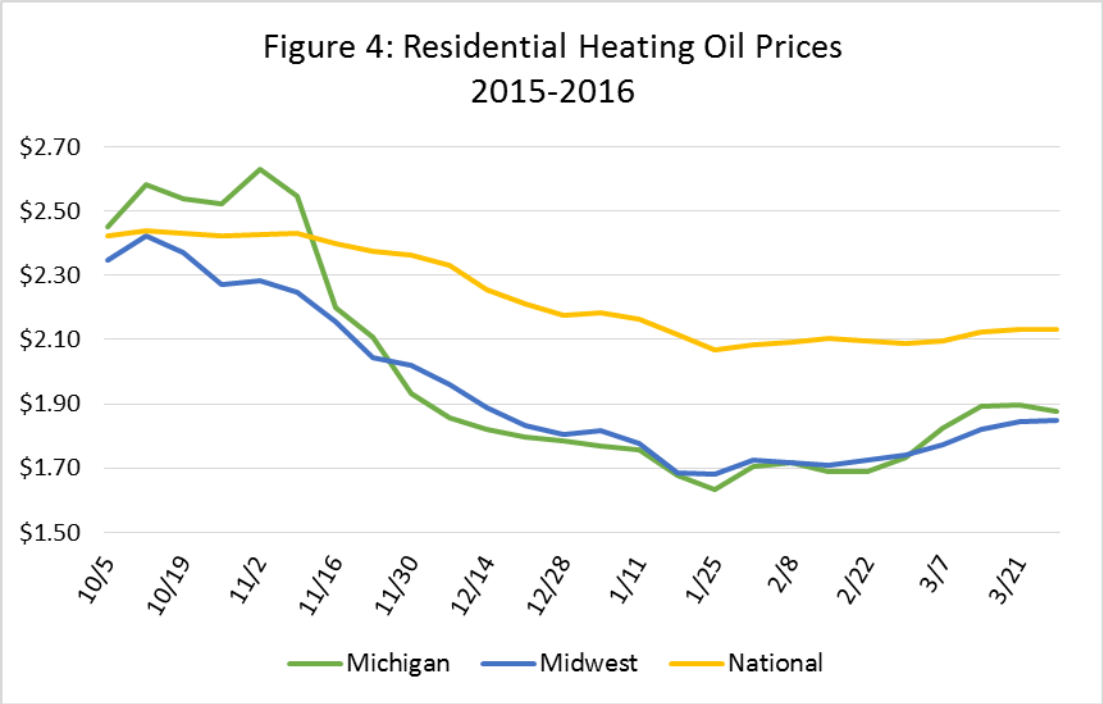


Residential No. 2 Heating Oil Prices

Heating oil prices showed a little more volatility than propane did. In Michigan, heating oil usage has gradually been supplanted by natural gas and propane, and now represents less than 2 percent of the heating fuels market in Michigan. While heating oil and diesel fuel are closely related products, No. 2 heating oil is not subject to the same environmental requirements or motor fuel taxes placed on diesel fuel. Historically, heating oil prices have fluctuated, frequently tracking the price of crude oil and are generally higher during the winter months when demand is higher.

As shown in Figure 4, heating oil prices in Michigan closely matched those found throughout the Midwest. National prices were somewhat higher than both Michigan and the Midwest.

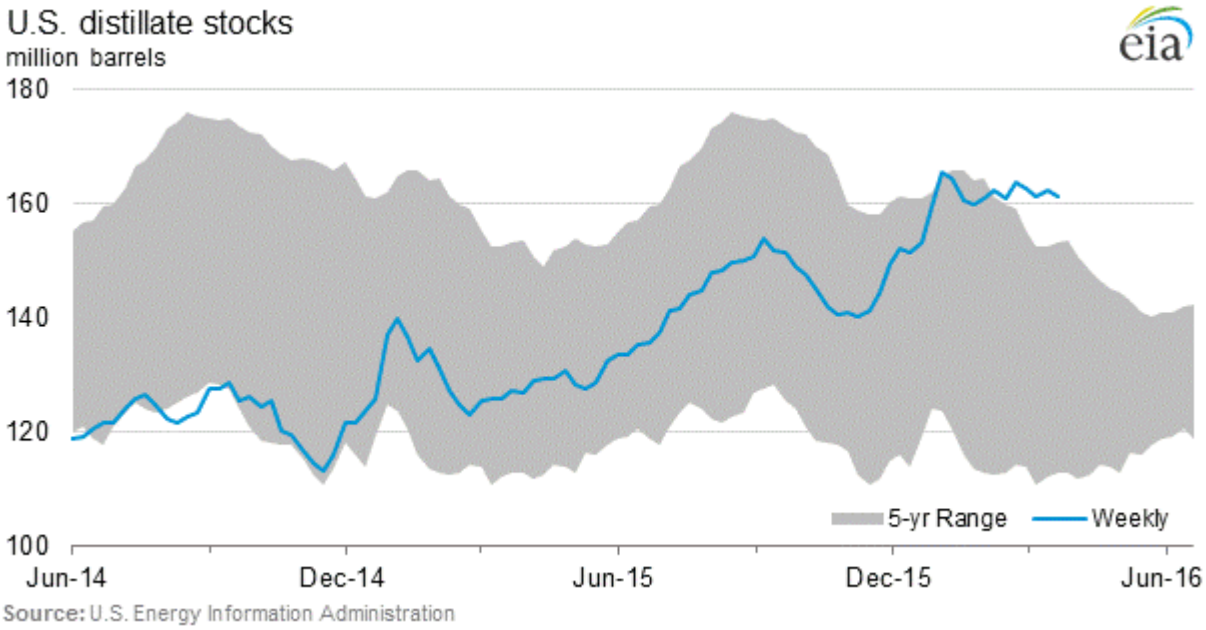
2015	**10/05**	**10/12**	**10/19**	**10/26**	**11/02**	**11/09**	**11/16**	**11/23**	**11/30**	**12/07**	**12/14**	**12/21**	12/28
Michigan	2.45	2.58	2.54	2.52	2.63	2.55	2.02	2.11	1.93	1.86	1.82	1.80	1.79
Midwest	2.35	2.42	2.37	2.27	2.28	2.25	2.16	2.05	2.02	1.96	1.89	1.83	1.80
National	2.42	2.44	2.43	2.42	2.43	2.43	2.40	2.38	2.36	2.33	2.56	2.21	2.18
2016	**1/04**	**1/11**	**01/18**	**01/25**	**02/01**	**02/08**	**02/15**	**02/22**	**02/29**	**03/07**	**03/14**	**03/21**	**3/28**
Michigan	1.77	1.76	1.69	1.63	1.70	1.72	1.70	1.69	1.73	1.82	1.93	1.90	1.88
Midwest	1.82	1.78	1.69	1.68	1.72	1.72	1.71	1.72	1.74	1.77	1.82	1.85	1.85
National	2.18	2.16	2.11	2.07	2.08	2.09	2.10	2.09	2.09	2.10	2.12	2.13	2.13



The average price for heating oil at the start of the 2015-2016 Michigan winter heating season was $2.45 per gallon, excluding the 4 percent sales tax, 84 cents cheaper than at the beginning of the previous heating season. After remaining in the $2.50 per gallon range for the early weeks of the season, prices began to drop precipitously in November and plunged to a low of $1.63 per gallon at the end of January before increasing slightly at end of the season to $1.88 per gallon. By the end of the heating season on March 28, 2016, Michigan's average price was $1.88 per gallon. The average price of heating oil in Michigan over the course of the season was $1.98 per gallon, 87 cents lower than last season or just over 30 percent below last season. It is much more typical for the price of heating oil to be higher at the end of the heating season than it was at the beginning. This heating oil price drop can be directly attributed to the drop in crude oil prices.

Figure 5 shows distillate inventory levels throughout the heating season. Total distillate stocks started the heating season in the middle of the five-year range but by December started to climb and by mid-March had risen to above the five-year average where they stayed. Stocks went into the heating season 20 million barrels above the same time period in 2014 and stayed fairly high for the entire heating season. The lowest inventories fell to was about 140 million barrels in the second week of November, but stocks then climbed into the 160-barrel range and stayed there for the rest of the heating season with a high of over 165 million barrels reached in mid-January. These high inventory levels were indicative of the warm winter seen in much of the nation including Michigan.

Figure 5: U.S. Distillate Fuel Oil Stocks



Weather Summary

Figure 6 depicts the statewide temperature rankings for the United States from October 2015 – March 2016. As can be seen, the entire country experienced well above average temperatures. The average temperature for the contiguous U.S. during December to February was 4.6 degrees F above the 20th century average, a new record. The February average temperature for the Lower 48 states was 5.7 degrees F above the 20th century average which puts it as the seventh February on record.

Figure 7 shows the population weighted heating degree days for Michigan over the last six heating seasons. In Michigan, this past winter heating season (Oct - March) was approximately 16 percent warmer than normal warmer than the winter of 2014/2015 which was 9.7 percent colder than normal.

Figure 6: U.S. Temperature Ranks

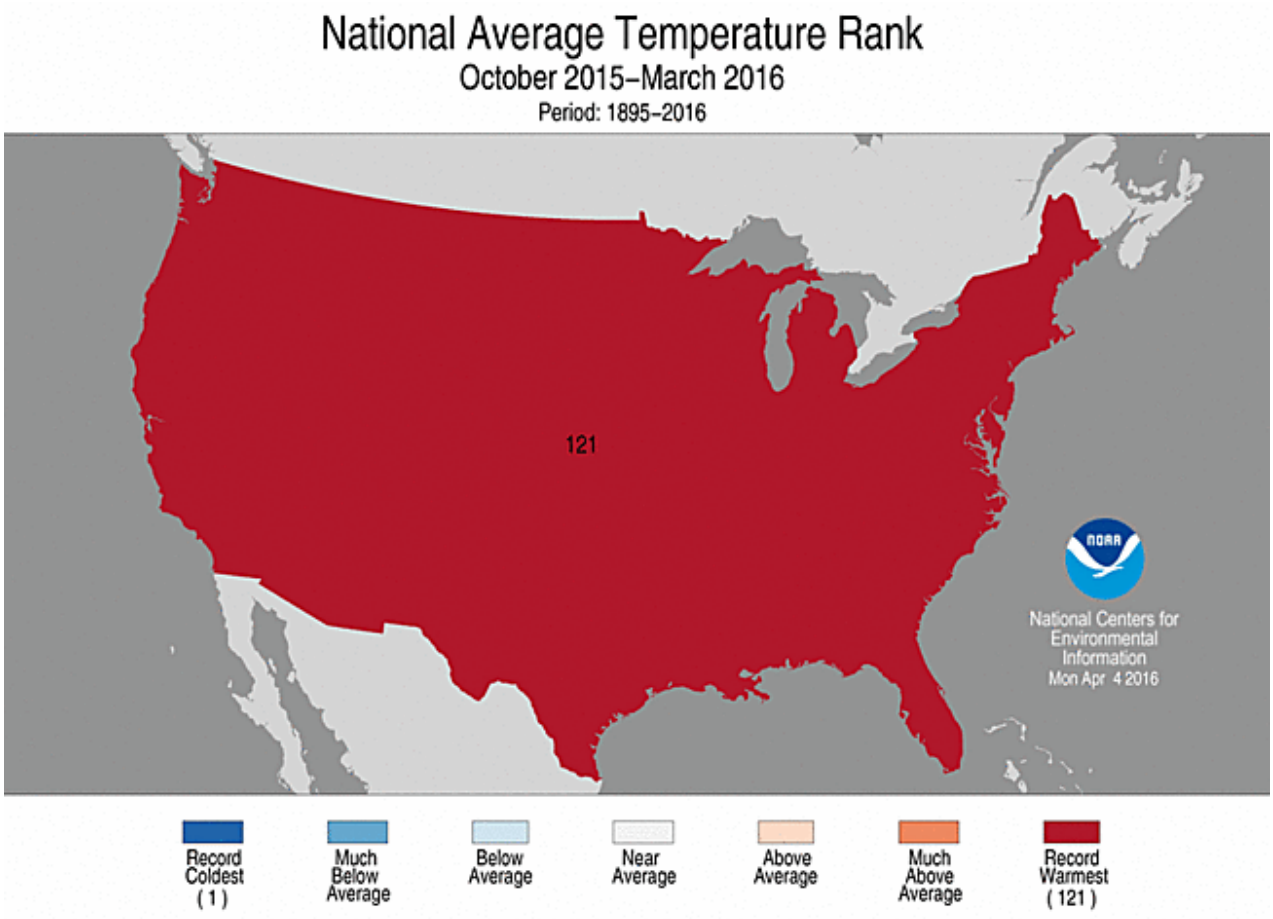
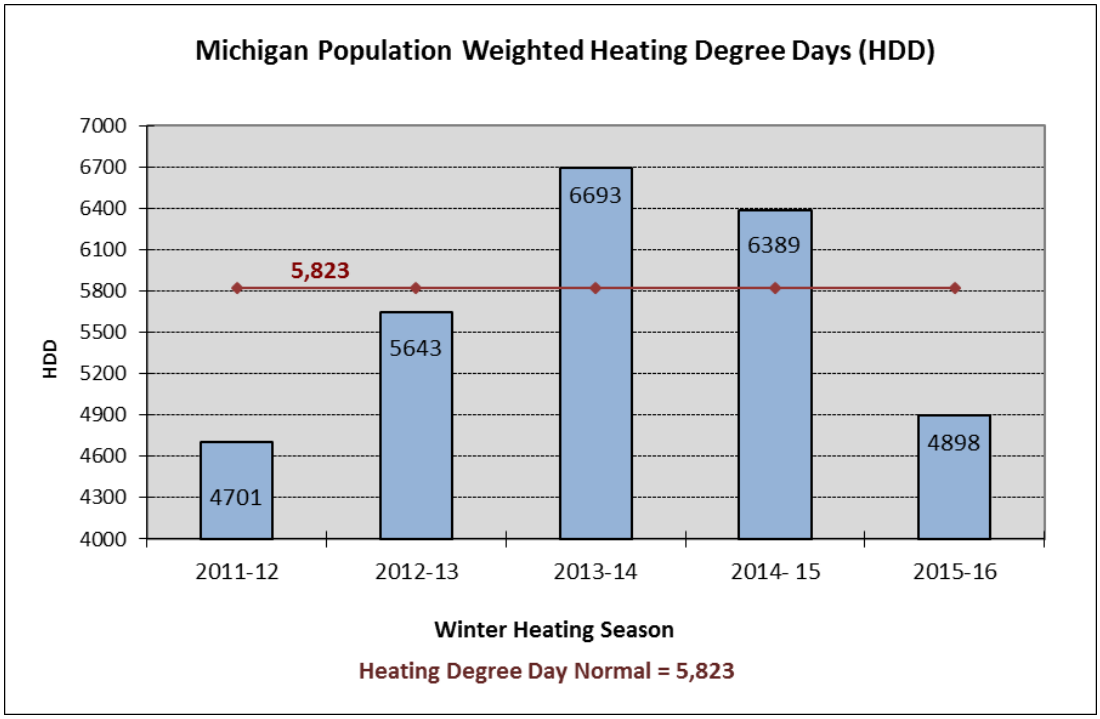


Figure 7: Michigan Heating Degree Days



Note: To provide a more accurate picture of winter heating demand, this chart has been revised to reflect only HDDs occurring during the Michigan winter heating season (October-March), as opposed to HDD totals for the entire year.

Methodology

The EIA provided the MPSC with a list of survey participants. The sampling frame for heating oil distributors was an established list of approximately 11,000 fuel oil dealers and distributors from Form EIA-863, "Petroleum Product Sales Survey" (1989). EIA officials used a one-way stratified sample design for Michigan based on No. 2 residential distillate sales volumes. Due to limited propane supplier information, EIA statisticians developed two strata for propane dealers – large, multi-state dealers comprised the first, and a random sampling comprised the second (many sources were used to collect the names and addresses for the random sampling). EIA officials selected 21 fuel oil distributors and 27 propane dealers to participate in the 2014-2015 survey for Michigan. The "Winter Fuels Explanatory Notes", a link to which is posted on the flowing page, contains detailed information on the sample design.

Survey Dates -- The MPSC conducted the survey weekly on each Monday or Tuesday beginning October 5, 2015 and ending March 28, 2016.

General Reporting -- The MPSC asked participants for the retail credit price charged to residential customers and verified changes from the reported price from the preceding survey. The No. 2 fuel oil residential price and the propane residential price are the credit prices paid for home delivery of 500 gallons. Reported prices excluded discounts and taxes. Participants reported prices to the nearest tenth of a cent (i.e., 0.895). The survey excluded sales to multi-family dwellings.

Electronic Filing -- EIA provided the MPSC with an electronic filing web form known as the EIA Survey Data Collection System. After collecting the data, MPSC staff uploaded it directly to EIA via a network connection to the Internet. Participants are listed alphabetically, identified by a seven-digit number, and prices are reported in dollars per gallon (i.e., $1.795).

Distribution of Aggregated Data -- After collecting the data, EIA officials edited and aggregated the information with surveys from the other states. The EIA published the survey results on their web site at http://eia.doe.gov/. For more information, visit this page or contact National Energy Information Center at (202) 586-8800.

Confidentiality of Reported Data -- Survey participation by fuel distributors is mandatory under the Federal Energy Administration Act of 1974 (Public Law 93-275). The EIA is responsible for assuring confidentiality of the data. Data on this form will be kept confidential and not disclosed to the public to the extent it satisfies the criteria for exemption under the Freedom of Information Act (FOIA), 5 U.S.C. Section 552, and other regulations. It may be released to the Department of Justice or to any other federal agency for official use, which may include enforcement of federal law. The information contained on this form may also be made available to any committee of Congress, the General Accounting Office, or other Congressional agencies authorized by law. A court of competent jurisdiction may obtain this information in response to an order.

Sources:

1) Residential Heating Oil Prices by Region and State, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report*,

http://www.eia.gov/dnav/pet/pet_pri_wfr_a_EPD2F_prs_dpgal_w.htm

2) Wholesale Heating Oil Prices by Region and State, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report,*

http://www.eia.gov/dnav/pet/pet_pri_wfr_a_EPD2F_PWR_dpgal_w.htm

3) Residential Propane by Region and State, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report,*

http://www.eia.gov/dnav/pet/pet_pri_wfr_a_EPLLPA_PRS_dpgal_w.htm

4) Wholesale Propane Prices by Region and State, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report,*

http://www.eia.gov/dnav/pet/pet_pri_wfr_a_EPLLPA_PWR_dpgal_w.htm

5) Winter Fuels Explanatory Notes, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report*,

http://www.eia.gov/petroleum/heatingoilpropane/pdf/explanatorynotes.pdf